



The Minuteman Repeater Association

The Minuteman

Volume 31, Issue 5

May 2002



President's Corner by Kevin Paetzold, K1KWP

Last meeting: On behalf of the MMRA I would like to thank W1RH, president of the Framingham Amateur Radio Association, for speaking at our March meeting. It was one of the few snowy evenings this winter. Those who attended received a great deal of information about digital TV technology, the current status of HDTV, and a lot about the local broadcasting system in general. This was another speaker in a pretty long series which I expected to generate a lot of interest from members. Thank you, N1BE, for setting this up.

At the last meeting the door prize was a "brand new" 2001 ARRL handbook which was donated by N1BE. At a previous meeting K9HI, ARRL EMA Section Manager, also donated a 2001 ARRL handbook. There usually is some kind of raffle or door prize or pool at every meeting the profits of which are used to add to the MMRA treasury funds.

May meeting: The MMRA has a fixed meeting schedule (third Wednesdays of September, November, January, March, May). The last meeting of the 2001-2002 year is Wednesday May 15 at 7:30PM. This meeting, like most general meetings, is at the Campion center in Weston. Directions and maps to the meeting are available on the www.mmra.org web page and on the mmra@yahoogroups.com web page.

MMRA Elections: The MMRA bylaws call for elections at the May meeting. All elected offices in the MMRA with the exception of the one unexpired director position (held by WA1NLR) are open. It would be good to see increased interest in club elections from the members for at least three reasons that I can think of:

1. It is your club. It is your repeater system. It is your money that you pay in dues. Do you want to have a say in how it is spent? Are there changes or improvements in the organization or system that you would like to see?
2. There is some work required to keep the MMRA organization and its repeater system operating. I have pointed this out in previous newsletters. If this work is shared among the membership it does not become overly time consuming for any one individual. Although I certainly appreciate everyone who is a member for supporting the organization, the MMRA needs to see more members who are willing to become involved and share in the behind the scenes work. Insufficient turnover in officers leads to

burnout of all the officers. Most people did not get into amateur radio for the fun of being a club officer.

3. To acknowledge those people who will be serving or have served in the past as officers, directors, trustees, and/or who have volunteered time/resources/expertise in many ways, even including getting poison ivy while cleaning the jungle around a repeater shelter.

The MMRA bylaws and a description of the election procedures and offices are available at <http://www.mmra.org/club/about/bylaws.html>

The MMRA repeater system did not pop out of the earth like a mushroom. It took the organization and efforts of a lot of people over a lot of years. I consider myself to be a new ham (4-5 years). When I became licensed I took the test at an MMRA VE session.

I joined the MMRA because of what I saw as the capabilities of the linked system. (I joined at the 1998 Boxborough convention). One way that I have tried to show my appreciation for the efforts (and the people) that it took to build this organization and this system is to make the time to become involved more than just being a user of the system. I know that most people have very busy lives these days but I encourage the other members (and especially the newer hams out there) to consider helping when and however they can.

Summer Activities: There are several MMRA activities that are possible this summer. These range from activities related to the Boxboro ARRL New England Division convention to field trips/tours and repeater site work. Please subscribe to the mmra@yahoogroups.com email list and/or please monitor and check into the weekly Tuesday evening nets for further information. We don't anticipate sending out a special newsletter to announce these activities.

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About the Minuteman Repeater Association

The Minuteman Repeater Association (MMRA) is dedicated to Amateur Radio and public service. The MMRA has built a large system of repeaters in Eastern Massachusetts.

The MMRA meets on the 3rd Wednesday of September, November, January, March, and May. Meetings start at 7:30 PM in the Campion Center in Weston MA. Meetings are open to all interested parties. Talk-in is available on the Weston 2-meter repeater (146.82).

The Minuteman newsletter is mailed one week before each meeting. Members are encouraged to submit articles. Articles may be sent to the editor via email to n1be@arrl.net. The deadline for articles is the last Friday of the month preceding the meeting.

Each Tuesday evening at 8PM the MMRA links all the repeaters for an open net. The topic is "Technical Information and Other Stuff". Feel free to join us.

Membership in the MMRA is open to all radio amateurs. Annual dues are \$25 per individual or \$35 per family. The membership year starts on Sept 1st. Dues for new members are prorated for the remainder of the year. See our web-site for details.

Email to the club leadership should be sent to mmra@mmra.org. The MMRA web site is: <http://www.mmra.org/>

An email distribution list for club members has been established on: <http://www.yahogroups.com/> — the name of the group is "MMRA".

Repeater and Frequency Information

Location	MHz	PL	Call	Note
Marlboro	53.810	71.9/173.8	W1BRI	PTL
Marlboro	146.610	146.2	N1BHI	FTL
Quincy	146.670	146.2	W1BRI	PTL
Stoneham	146.715	146.2	N1NVL	PTL
Weston	146.820	146.2	WZ0C	PTL
Hopkinton	223.940	103.5	N1BHI	FTL
Quincy	224.400	103.5	N1KUG	FTL
Weston	224.700	none	N1HBR	FTL
Stoneham	446.725	88.5	N1NVK	NA
Shrewsbury	449.575	88.5	W1BRI	FTL
Marlboro	449.925	88.5	W1MRA	Network Hub

Marlboro	144.390	none	N1QPR-2	APRS Digipeater
Marlboro	145.030	none	W1MRA-3	KA-node Digipeater
?	145.630	146.2	W1MRA	Fox Box

Notes: FTL = Full Time Linked to the Hub.
PTL = Part Time Linked (on demand).
NA = linking is Not Available.

PL: There are two 6 meter receivers with different PL's. PL is required on 2 meters to prevent interference. The code **750** will temporarily disable the PL requirement.

Using the Autopatch: Only the hub has a telephone line.
(1) Link to the hub if necessary.
(2) Then bring up the patch using the 449.925 autopatch codes.

Control codes are sent to members upon receipt of dues.

MMRA Leaders

President	Kevin Paetzold	K1KWP
Vice President	Bob Evans	N1BE
Secretary	Michael Ford	WZ0C
Treasurer	Bill Northup	N1QPR
Clerk	Eddie Mulhern	N1NOM
Technical Officer	Bryan Cerqua	W1BRI
Director	Al Kunian	KA1AL

Director	Wayne Foley	N1XXI
Director	Shelley Northup	N1VJE
Director	Bill Thorpe	WA1NLR
Director	Clark Conti	N1NVK
Emergency Coordinator	Kevin Paetzold	K1KWP
Newsletter Editor	Bob Evans	N1BE
VEC Liaison	Bill Wade	K1IJ
Webmaster	Michael Ford	WZ0C

President's Corner (cont.)

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Boxboro: The convention is Saturday and Sunday August 24 and 25. Further info at <http://www.boxboro.org/>. There is also a setup period on Friday afternoon. Because we are providing talk-in, the MMRA will have a suite at the convention. I would like to see **all** of the MMRA members stop by the booth to take a break or even just to say hello.

The MMRA membership year runs from Sept through August. The Boxboro convention is a great place to renew your membership! We will have on hand the autopatch and linking access codes for any new members that join.

Eddie, N1NOM, has volunteered to coordinate the talk-in station. We need additional members to volunteer to help with the talk-in duties. We will need to borrow the equipment to setup the station.

We need to staff the MMRA booth while the convention is open. We will need members to volunteer to help staff the booth, assist with the talk-in, answer questions, take memberships, and work the equipment. (We usually have the IFR service monitor in the booth for an HT clinic). We also will need help to set up the booth and the antenna before the convention begins (probably Friday afternoon).

Please consider helping out the MMRA at the convention. If you can help please let us know via the Tuesday night net or via email to mmra@mmra.org.

Tours: There are two activities under discussion that may become available this summer. One is in the Quincy area and would involve the USS Salem battleship. The other is a tour of the WBZ (and a whole lot more) transmitter facilities. I expect at least one of these to come to fruition. Please stay tuned to the MMRA email list and the Tuesday night nets for more information if/when these opportunities fully develop.

146.610/53.81 Shelter projects: A project to upgrade the antennas and tower at the 146.610/53.81 site is underway and slowly making some progress. Stay tuned to the MMRA email lists and the Tuesday night nets for more information as to when work parties for this will be occurring. If we share the work it will go very quickly (any given activity a couple of hours) and who knows, we might all learn something about towers.

The Year: I thought I should give some comment on the "State of the MMRA." I think it is fair to say that there is good news and there is bad news. Good news is that we did not have to decrease our overall bank balance for the year. Bad news is that we only "broke even" because of some significant extra contributions made by some members.

Good news is that we had 27 new members this year. Bad news is that we lost 47 members who did not renew. This results in a net loss of 20 members (vs. net losses of 16 and 12 in 2000 and 2001).

The officers made several efforts to drive membership and renewals this year which seemed to generate a lot of renewal responses. I was surprised to see over 10% net loss in overall membership. We did pull in a fair number of people who had not renewed in the previous year. The MMRA now has 161 members (and of course we all need to renew around the September timeframe).

Please attend the May meeting and participate in the election. I hope to see you in Boxboro. Please stop by the MMRA booth and say hello (and bring those other hams that should be part of supporting the MMRA). Please try to help us staff the MMRA presence at Boxboro. Please renew your membership at Boxboro or otherwise. Stay in touch to hear of upcoming summertime activities. Have a good summer!

Board Meeting Minutes by Bob Evans, N1BE

The MMRA Board of Directors met the evening of April 17. Present were K1KWP, N1BE, WZ0C, N1QPR, N1NOM, W1BRI, N1VJE, N1XXI, WA1NLR and KZ1G. Many issues were discussed.

WZ0C reported membership status. This showed a steady decline in membership over the last few years. A list of current members was also made available.

N1QPR gave a detailed report of the MMRA finances. This indicated a drop in our treasury balance of about

\$500 per year for each of the last 4 years. Income, mostly from dues, is expected to be \$4040.25 this year. Expenses (administration and repeaters) is expected to be \$4050.

If we are careful the MMRA may be able to afford an improvement project. We discussed possible expenditures to improve the MMRA system. The project to improve the 53.81 transmit antenna support will probably run \$300 or a little more to install the used tower. We also considered adding battery backup, which might cost about \$200 per repeater.

W1BRI reported the technical status of the repeater system. He gave a cost estimate for the 53.81 antenna work. He talked about a diversity reception system for the 6-meter receivers. Bryan also suggested that we should repaint the shelter that houses the 146.61 repeater and 53.81 transmitter. The country club has done a big cleanup of that part of the grounds and our garish yellow enclosure is now exposed to the view of all the golfers.

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Repeater Report by Bryan Cerqua, W1BRI

Quincy 146.670: On a Saturday in March, Wayne, N1XXI, and I trucked down to Quincy to see why the repeater output power was very low. Once close to the repeater I could hear the exciter so I knew the problem must be with the power amplifier. I was hoping it was not something serious like blown power transistors since I completely rebuilt this PA not too long ago.

We removed the cover and looked for any obvious signs of failure; everything looked fine. Using a plastic tool to poke around on the PA revealed the problem, an intermittent near one of the power transistors. I tried to re-solder it with my wimpy gas powered soldering iron but it couldn't generate the required heat. We drove to the local radio shack to purchase a large soldering gun and grab a few slices of pizza at Domino's next door. After trying to reheat the area where the intermittent was we got things working but the power still changed when poking the area with the plastic tool.

I decided to remove the PA since working on it in the vertical position while inside the repeater is very difficult and would probably just make things worse. That evening I got the PA on the bench and re-soldered all the spots near the intermittent. I tested it on a dummy load and used a hair dryer to heat up the entire circuit board to see if I could make it fail; it passed the test. On Sunday morning I went back down to Quincy to re-install the PA which only took about an hour. All seemed OK so I locked up and went to Watertown to visit the YL.

Marlboro 146.61 Link Radio: For some time the 146.61 repeater has been keying up with no courtesy beep, indicating something is either being received on the UHF link radio or the tone decoder board inside the link radio is falsing. This would come and go on an infrequent basis. I've been wanting to re-work this link radio for some time since it is an older Johnson radio that has not been maintained since the day it was installed. Finally it failed and was no longer passing audio on to its transmitter. Thus I got a reason to extract the link radio. I was going up to the site anyway to check the output power of the six-meter repeater (see below).

Opening up the link radio on my bench, I was shocked to see the tone board was just stuffed inside a plastic bag and thrown inside the radio. This must have been one of my hack jobs when I got started with the MMRA. I also discovered that the audio amplifier had blown and the transmit frequency was about 5 KHz too high. Resetting the transmit frequency was easy but finding an audio amp IC entailed a trip to Stark and You Do It with no luck.

This audio amp IC, in a 5 pin TO-220 package, is fairly uncommon. Thinking I needed to retrofit a LM 386 chip in a different package I decided to look around in my garage. Sometimes you get lucky — in no time I found the remains of an old circuit board that was previously used to construct an 800 MHz band pass filter project for my trunk tracker scanner. On that board was the exact chip I needed. I carefully removed the part and re-installed it in the link radio. Just then



Link radio for 146.61

Roger, WA1NVC, arrived with bagels (see photo). The audio amp worked out great.

The Comm Spec TS32B tone board may have been falsing since its open collector pull down transistor was relying on a pull-up resistor inside the Scom 7K controller. To be sure there is a strong logic level into the 7K, I added an additional 50K pull-up resistor to 12 volts. The tone board was re-mounted securely.

I added a 5 pin mic jack to the back of the link radio to allow easy extraction in case there is a future need to service the link radio. After re-installing the link radio everything worked as expected, I no longer hear the repeater keying up due to false PL detection. I would also like to thank Kevin, K1KWP, Bob, K1IW, Bill, N1QPR, and Shelley, N1VJE, for showing up for the re-installation event.

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No they're NOT on the floor, there's plastic underneath the bagels. I'm not that desperate!

Repeater Report (cont.)

(Continued from page 4)

Marlboro 53.81: They say failures come in threes. Checking the output power of the six-meter repeater, I saw it was only putting out 25 Watts instead of 200. The final amplifier tube is driven by an attenuated 50W solid state amp. For some reason GE figures it's easier to just attenuate a 50W PA down to about 8W to drive the 4CX250-tube amp. The Bird wattmeter showed very little output if any from the solid-state PA. I removed the PA and placed it on my bench at home for failure analysis. The pre-drive power transistor had died. I had an extra GE mobile PA board with the transistor I needed. I carefully removed the good transistor, which is hard to do without destroying it, and replaced the blown one. This transistor is stud mounted. I was lucky that the nut was accessible and not blocked by the large heat sink on the back of the PA. The job was fairly easy and the fact that no money was spent was an added bonus.



53.81 pre-driver amp

The PA was re-installed the same Saturday morning the 146.61 link radio was replaced. After re-tuning the tube amp the output came up to full power again. Roger and I met up with Bill and Shelley. We had lunch at the golf club pub restaurant.

Actually failures come in fours. When I got home from Marlboro my Milford UHF repeater was putting out only 2W instead of 35W. You guessed it, the PA died. I had a spare UHF MASTR II mobile that Frank, W1JDO, had given me some time ago. I ripped the repeater apart and swapped in the spare PA deck. In a few hours it was back up to full power. It was a busy day, but it was nice relaxing in my recliner knowing that all is back to normal again.

Future changes to the 53.81 repeater: There are two six-meter receivers at the Slygo site. One receiver uses a 71.9 Hz PL and is connected to the PD 81 antenna on the top of the south side of the Slygo water tank. The other receiver uses a 173.8 Hz PL and is connected to a Diamond DP-GH62 thirty feet off the ground. Users are constantly switching the PL on

their radio depending on their location. It is possible to eliminate this need to for users to select the best transmit PL. I'm working on a set of new receivers that will use a voter circuit by WB2WHC as shown in the October 1992 QST. The final product will use both antennas and automatically select the receiver/antenna with the best signal to noise ratio. This project will be a donation to the MMRA by me since the club is not in a position to afford the changes at this time. I hope to have the project completed in a few months.



MASTR II mobile and preamp in rack at the Billerica (BARS) 147.12 repeater. (Not shown, there is also a 53.07 MHz repeater in the same room)

MMRA support of the Billerica 147.120 Repeater: The Billerica 147.12 repeater was not receiving as well as it should have been. Al, K1NZQ, and I visited with the MMRA service monitor to investigate. Al had just replaced the older receiver with a MASTR II mobile and was aware of my experience with MASTR II and asked for my help.

After spinning our wheels somewhat we discovered that the custom jumper cable used to connect to the preamp was not making a connection to the center pin of the BNC connector. The interesting thing is when we checked the preamp with this jumper, it seemed to have a gain of about unity. This led us to believe that the preamp was not working correctly. It turns out that the combination of the air gap capacitance of the bad cable and the gain of the preamp were canceling out, making it look like the preamp had a gain of one. After the cable was repaired, every thing checked out fine.

Massachusetts Amateur Radio Operators Prepare for Emergency

by Tom Kinahan, N1CPE, MA State RACES Radio Officer

On Saturday March 23rd over one hundred Amateur radio operators in Massachusetts representing RACES, ARES and SKYWARN participated in a statewide communications drill.

The drill, titled Hurricane Xavier, simulated a category 3 hurricane striking Massachusetts, causing extensive wind damage and flooding across the entire state. Participants were invited to attend a pre-drill briefing where a package of message forms, procedure documents, and a set of 4 envelopes were distributed. At the meeting NTS message formatting procedures were reviewed, and all were left on their honor to open the envelopes at the pre-determined times printed on them.

The envelopes contained information on the current status of the hurricane, and specific actions that were requested for that hour. RACES and ARES participants were asked to originate an NTS format message to their State Regional EOC or DEC each hour. SKYWARN participants were asked to give a weather report to their SKYWARN NCS.

40 Meter HF, 6 Meter simplex and repeater, and 2 meter repeaters were used throughout the drill. 257 NTS format messages were originated and delivered during the drill by 165 individuals.

We were covered in the press by the New Bedford Standard Times, Providence Journal, Boston Globe, WBZ Radio, and WCVB Television.

For a full report on the drill, point your web browser at: <http://www.qsl.net/n1cpe/SETMarch2002.pdf> or at <http://n1cpe.dnsalias.net:81/SETMarch2002.pdf>

For information on ARES, contact Dennis Zonia, K1VSG (k1vsg@juno.com) for Western Massachusetts, or Mike Neilsen, W1MPN (w1mpn@arrl.net) for Eastern Massachusetts. For information on RACES, contact Tom Kinahan, N1CPE (n1cpe@amat.org). For information on SKYWARN, contact Rob Macedo, KD1CY (rmacedo@ma.ultranet.com).

Thanks to everyone who participated!

Fox Hunting

Fox hunts, or hidden transmitter hunts, have long been a staple of MMRA activities. There has been increased activity this spring. Details of some recent hunts are posted on N1QPR's website www.foxfinder.org.

The 10 AM Saturday hunts on 146.01 happen almost every week. With daylight until 8PM, once a week evening hunts at 6PM on 146.22 will start soon. Listen for an announcement on the Tuesday net or via yahoogroups e-mail (see pg. 2).

Fox box report:

In March and April, Clark, N1NVK, hid the fox box most weeks. Now Eddie, N1NOM, has taken over the hiding of the fox box. The box is usually out for a weekend and a few days before or after. (Hunting the box is a good way to learn. If you find it, no one knows how long it took you.) The box is also a great signal source for calibrating or testing your hunting gear.

Deployment of the box is announced by e-mail.

Board Meeting Minutes (cont.)

(Continued from page 3)

It also was mentioned that we never recognized N1ZCB for cutting much brush to make the shelter accessible, at the cost of a bad case of poison ivy.

Thanks Paul!

The MMRA has a new commercial 2-meter antenna that was slated for use at Stoneham. Since access to that site has been difficult, we considered selling that antenna rather than using it.

Reports were given by two sub-

committees. The nominations committee was still seeking nominees for clerk and secretary. We considered how to go forward if those offices are not filled by the election in May. The lifetime member committee has not met since their appointment.

Discussion turned to the Boxboro convention where the MMRA will provide talk-in. N1NOM volunteered for a major role managing the 2-Meter station we will use for talk-in. Eddie also will be the

keeper of any dues collected at our suite.

A final topic was potential summer activities. In addition to the tours mentioned in the President's Corner, we discussed the possibility of another Mobile-a-thon picnic or Fox-a-thon. Due to other demands on their time, no one present volunteered to lead one of these activities. (A volunteer to do a little organizing is all it would take for one of these activities to occur.)

Public Service Volunteer Opportunities in the New England Division

Listing public events at which Amateur Radio communications is providing a public service and for which additional volunteers from the Amateur Community are needed and welcome. Please contact the person listed to identify how you may serve and what equipment you may need to bring. **Every event listed is looking for communications volunteers.**

Date	Location	Event	Contact	Tel/Email
May 19	Devens	MA Parker Classic Road Race	Stan KD1LE	978-433-5090 kd1le@amsat.org
Jun 1	Hollis	NH Apple Country Challenge	Neil K1VY	603-465-2788 Neil@innermedia.com
Jun 1	Narragansett	RI ADA Ocean State 150	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Jun 2	N Kingstown	RI ADA Ocean State 150	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Jun 22-23	Boston to Provincetown	MA MS Bike Tour	John N1PYN	508-588-3250 n1pyn@arrl.net
Jul 27	Marlboro to Amherst	MA MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Jul 28	Amherst to North Adams	MA MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Jul 29	N. Adams to Poultney	MA MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Jul 30	Poultney to Burlington	VT MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Jul 31	Burlington to Killington	VT MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Aug 1	Killington to Keene	VT MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com
Aug 2	Keene to Marlboro	NH MSPCC Yankee Tour	Bruce KC1US	781-275-3740 kc1us@net1plus.com

This list is published periodically as demand warrants by Stan KD1LE and Ralph KD1SM. Our usual distribution is via packet to NEBBS, via Internet mail to the arrl-nediv-list and ema-arrl distribution lists, and on the World Wide Web (see URL below). If other mailing list owners wish us to distribute via their lists we will be happy to oblige. Permission is herewith granted to republish this list in its entirety provided credit is given to the authors and the URL below is included. Send comments, corrections, and updates to:

(via packet) KD1SM@K1UGM.#EMA.MA.USA,
(via Internet) KD1SM@ARRL.NET.

We make an attempt to confirm entries with the coordinator unless the information is from another published source. We very much appreciate the assistance we have been receiving from our 'scouts'; everyone is welcome to send us postings.

World Wide Web users: the most recent copy of this list is maintained as <http://purl.org/hamradio/publicservice/nediv>.

Eastern States Expo ham radio booth, Sept 13-29 by Larry Buck K1HEJ

One of my "projects" for nearly 15 years has been working on the committee for the ham radio booth at the Eastern States Exposition in West Springfield, Mass. This event will take place Sept 13th through Sept 29th this year. For the last several years the public attendance has exceeded a million people. It takes between five and seven volunteers each day to staff this booth. Volunteers answer questions regarding Ham Radio, operate on the air and take NTS messages from the public. All volunteers must be pre-scheduled and receive a Fair admission ticket and a parking pass for the day they work in the booth. The booth shifts are 10 AM to 4 PM and 4 PM to 10 PM weekdays and 4-hour shifts on weekends covering the same time. This year all booth shifts must be scheduled

through Al Gerke, N1JWF, (aln1jwf@juno.com).

This event provides the largest first hand opportunity for hams in general, and especially ARES groups, to experience large ongoing operations similar in many ways to what one might find in large scale Emergency Communications Centers.

At the Big E, all equipment is set up by the Committee, and booth volunteers then rotate in shifts, many times working with hams who have not had the opportunity to work together before. Experienced day captains are provided to give volunteers operational information. Clubs are welcome to provide us with upcoming class schedules and meeting dates.

For more info contact me, Larry, K1HEJ via telephone 860-223-0778 or via e-mail: k1hej@arrl.net

Next Meeting — Wednesday May. 15, 2002

W3EVE: Ham Radio Support for 9/11 in NYC

Our speaker at the May meeting will be Steve Schwarm, W3EVE. Steve was asked by ARES to organize and lead the initial team of amateur radio operators from the EMA section that responded to New York City after the September 11th attacks. He will be

talking about his first hand experiences relating to that activity. The information and lessons learned from that experience will be invaluable if we are called upon in a similar way in the future, a real probability as we all unfortunately have been made aware.

Steve is very experienced with emergency and public service communications. He led the effort to organize communications for this year's Boston Marathon. A few years ago, Steve presented to the MMRA on digital communications, demonstrating that he is an entertaining speaker.

Calendar of Ham Radio Events

- May 15:** MMRA meeting
- May 19:** Cambridge Flea at MIT
- Aug 23:** MMRA Newsletter Deadline
- Aug 24-25:** Boxboro MA ARRL Convention
- Sep 18:** MMRA meeting
- Nov 2:** Simulated Emergency Test
- Oct 4-5:** Hopkinton NH Hosstraders Flea
- Oct 25:** MMRA Newsletter Deadline
- Oct 24-27:** Enfield CT Microwave Update
www.microwaveupdate.org
- Nov 20:** MMRA meeting

(Flea market info from W1GSL list. <http://mit.edu/w1gsl/Public/ne-fleas>)



MMRA VE Sessions

3rd Saturday of each Month

9 AM at the Marlboro Public Library

Contact: Bill Wade, K1IJ

781-891-9079 Evenings 6 to 10 PM,

Weekends 8 AM to 10 PM.

Accredited by the ARRL VEC

THE MINUTEMAN REPEATER ASSOCIATION

MMRA
P.O. Box 669
Stow, MA. 01775-0669

Email: mmra@mmra.org



WE'RE ON THE WEB!
[HTTP://WWW.MMRA.ORG/](http://WWW.MMRA.ORG/)
